

FIG. 1

	ONE SECTOR (PHYSICAL SECTOR)								
PREVIOUS SECTOR	HEADER (EMBOSS)	SYNCHRO- NIZATION CODE	MODU- LATED SIGNAL		Ī	MODU- LATED SIGNAL	HEADER OF NEXT SECTOR		

FIG. 2

ONE ECC BLOCK 502 (CLUSTER OF 16 SECTORS = 32 kB)										
	SECTOR 501a	SECTOR 501b	SECTOR 501c		3	SECTOR 501q				

FIG. 3

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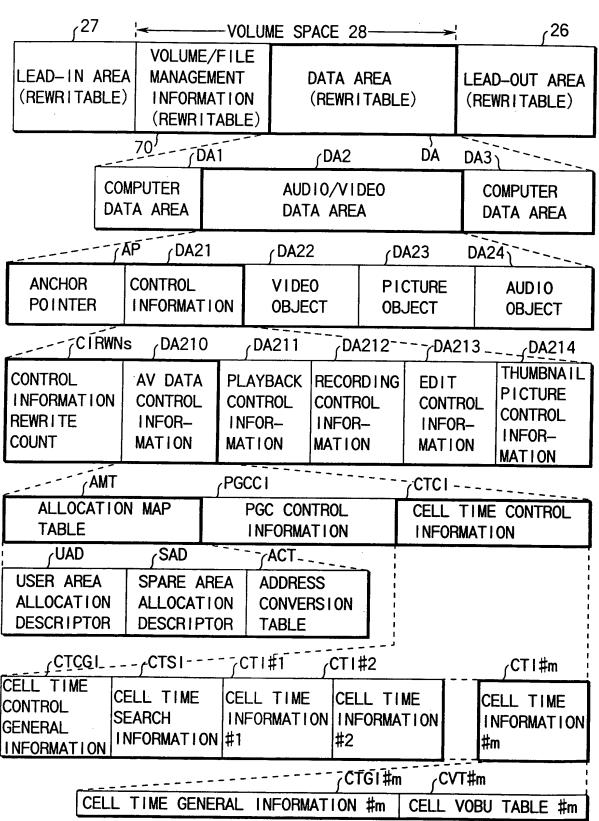


FIG. 4

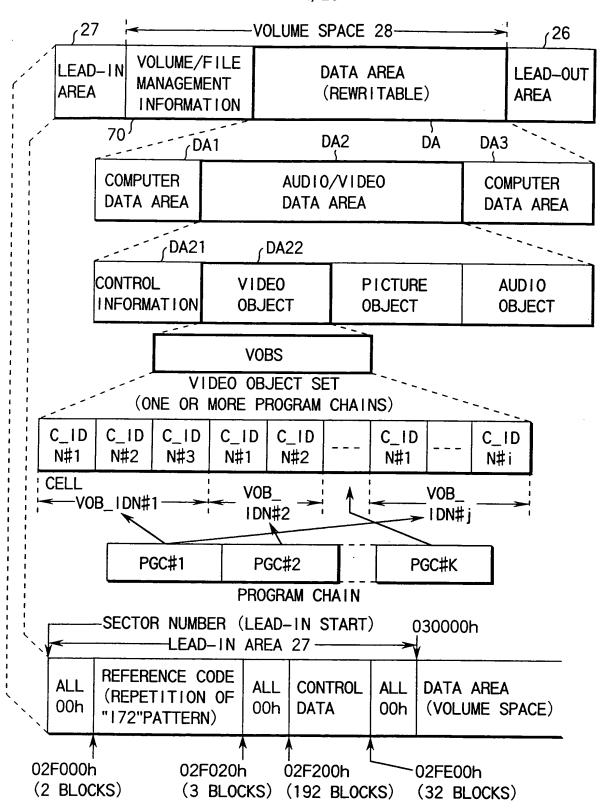


FIG.5

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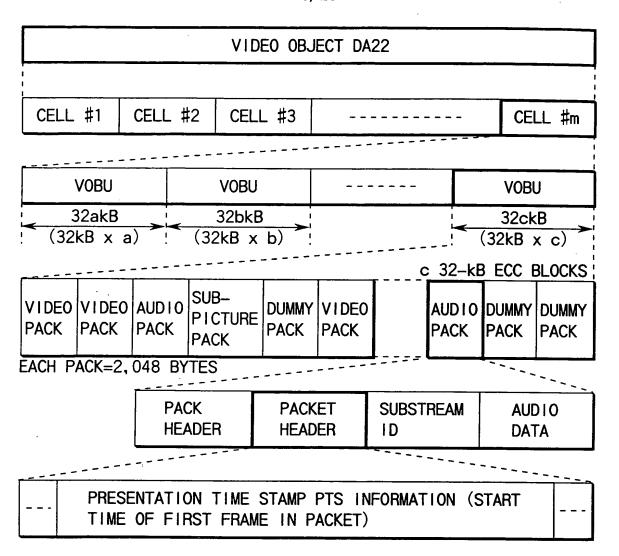


FIG. 6

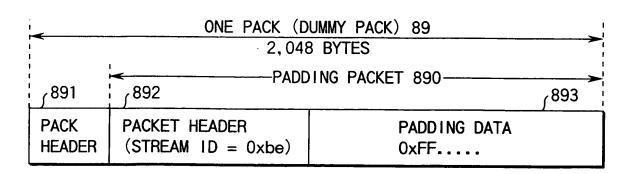


FIG. 7

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NUMBEI PICTUI IN VOI	RES F	NUMBER PICTUR IN VOE	RES		PICT	TURES P		PIC	NUMBER OF PICTURES IN VOBU#1		PIC	BER OF TURES VOBU#n
CELL T ID DI T	ID DURA- CELL SET DATA DESC SETS RIPT			TI PH SI OR	LL ME IYSIC ZE	AL CO		TI-	TIME CODE	NUMBE OF ACQUI RED DEFEC	- F	CQUI- RED PEFECT DDRESS
<pre><remarks> SET IS ALSO REFERRED TO AS EXTENT</remarks></pre>												
GENER INFOR	CELL DATA GENERAL INFOR- MATION TIME CODE TABLE			ACQUIRED CEL DEFECT: VID INFOR- INFO MATION MAT			I DE NFO	:0 R-	0 AUDIO R- INFOR-			LL 3 CTURE FOR FION
CELL T	IME IN	IFORMA	TION	CTI	#m 			==	====			
CELL T	IME GE	NERAL	. INF	ORMA	TION	#m	С	ELL	VOBU	TABLE	#m	
11	VOBU VOBU INFORMATION INFO #1 #2								VOE I NF #n	BU FORMAT	ΓION	
												T ! !
	VOBU GENERAL INFORMATION			1		AUDIO SYNCHRONIZATION INFORMATION			FION			

FIG.8

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CORRESPONDING	INFORMATION	INFORMATION	MINDED OF
INFORMATION	NAME	CONTENTS	NUMBER OF
VOBU GENERAL	I-PICTURE	DIFFERENTIAL ADDRESS VALUE OF	BYTES USED
INFORMATION	END	I-PICTURE END POSITION FROM	
	POSITION	VOBU START POSITION	
DUMMY PACK	NUMBER OF	NUMBER OF DUMMY PACKS IN VOBU	1
INFORMATION	DUMMY PACKS	THOMBELL OF BOMMIT TACKS THE VODO	l'
	DUMMY PACKS	DUMMY PACK INSERTION	2 x DUMMY
	DISTRIBUTION	DIFFERENTIAL ADDRESS FROM START	PACK
		OF VOBU, AND EACH NUMBER OF	NUMBER
		DUMMY PACKS (2 BYTES EACH)	
AUDIO	AUDIO STREAM	NUMBER OF CHANNELS OF AUDIO	1
	CHANNEL NUMBER	STREAM	
INFORMATION	I-PICTURE	DIFFERENTIAL ADDRESS VALUE OF	1
	AUD I O	SECTOR INCLUDING AUDIO PACK OF	
	POSITION #1	THE SAME TIME AS 1-PICTURE	
ļ		START TIME FROM START OF VOBU	·
		(MSB = "0" : LOCATED BEFORE	
		VOBU, MSB = "1" : LOCATED AFTER	İ
		VOBU)	
	I-PICTURE		2
	START AUDIO	SAMPLE POSITION OF THE SAME	
	SAMPLE NUMBER #1	TIME AS 1-PICTURE START TIME IN SECTOR AS COEFFICIENT OF SERIAL	l
		NUMBERS OF ALL AUDIO PACKS	
		PRESENCE/ABSENCE OF	1
		SYNCHRONIZATION INFORMATION	1
		BETWEEN AUDIO AND VIDEO STREAMS	
	FLAG #1	(NEXT ITEM IS NOT AVAILABLE IF	
		ABSENT)	
	AUDIO	THE NUMBER OF AUDIO SAMPLES	2
		INCLUDED IN VOBU	_
	DATA		i
	I-PICTURE AUDIO	POSITION #2	1
		POSITION #2 AUDIO SAMPLE NUMBER #2 ATION FLAG #2 ATION DATA	2
	AUDIO SYNCHRONIZ	ATION FLAG #2	1
	AUDIO SYNCHRONIZ	ATION DATA	2

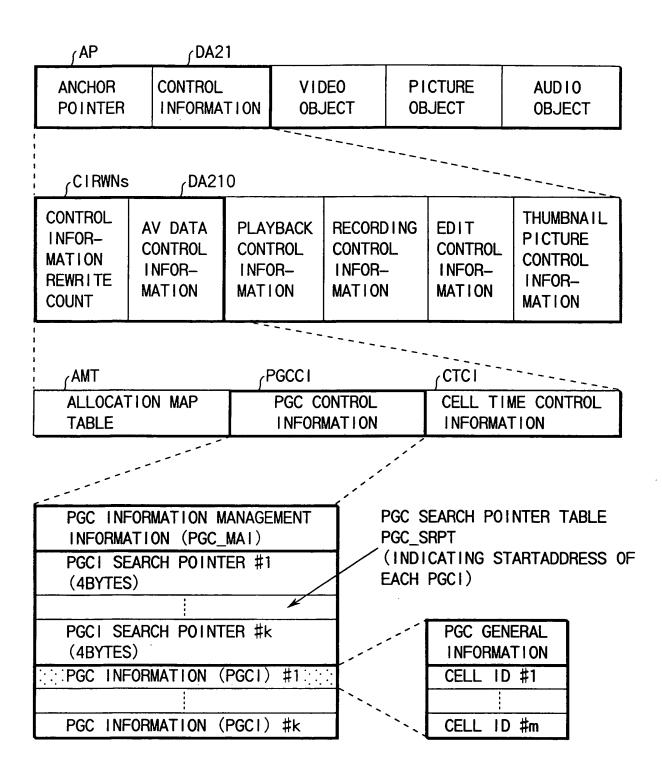


FIG. 10

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POSITIONS OF SHIFT PRODUCED BETWEEN ECC BLOCK BOUNDARY AND VOBU BOUNDARY

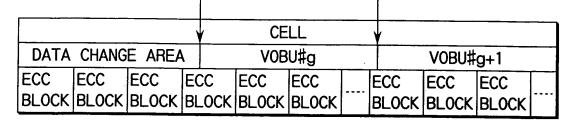


FIG. 11

SHIFT-REMOVED POSITIONS BETWEEN BOUNDARIES OF ECC AND VOBU

			,	CELI	_	1		<u> </u>		
DATA CHANGE AREA VOBU#g						VOBU#	g+1			
ECC BLOCK					ECC BLOCK			ECC BLOCK	ECC BLOCK	

FIG. 12

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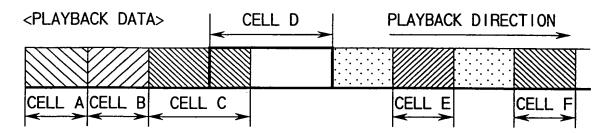


FIG. 13

PGC INFORMATION

PG	C#1	PG	C#2	PGC#3		
NUMBER (OF CELLS	NUMBER (OF CELLS	NUMBER OF CELLS = 5		
CELL#1	CELL A	CELL#1	CELL D	CELL#1	CELL E	
CELL#2	CELL B	CELL#2	CELL E	CELL#2	CELL A	
CELL#3	CELL C	CELL#3	CELL F	CELL#3	CELL D	
				CELL#4	CELL B	
				CELL#5	CELL E	

FIG. 14

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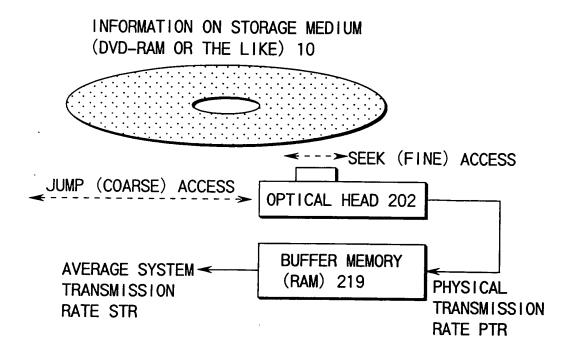
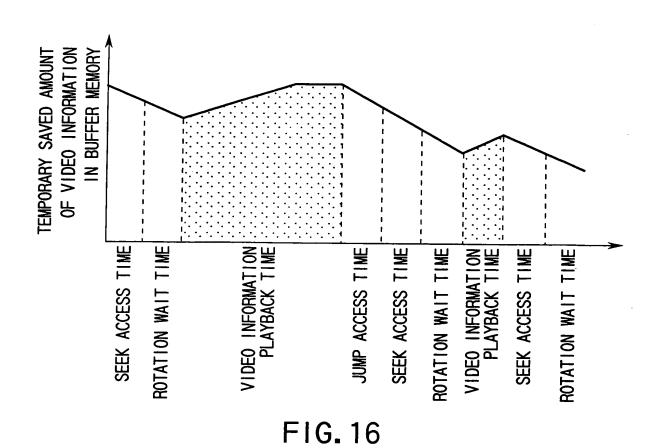
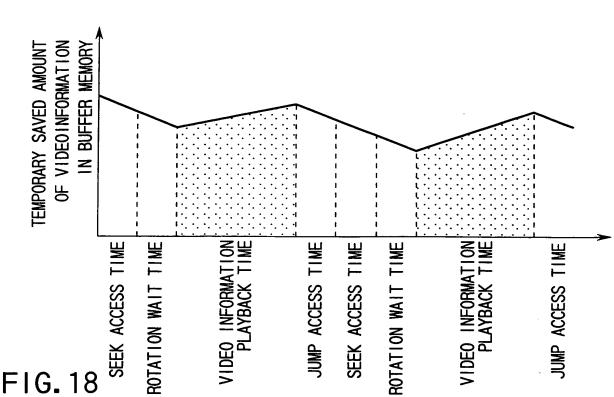


FIG. 15



OBLON, SPIVAK, et al. DOCKET NO: 249776US2S DIV INVENTOR: Hideo ANDO, et al. **SHEET 12 of 25** 12/25 VIDEO INFORMATION PLAYBACK TIME VIDEO INFORMATION PLAYBACK TIME VIDEO INFORMATION PLAYBACK TIME SEEK ACCESS TIME ROTATION WAIT TIME



TEMPORARY SAVED AMOUNT OF VIDEOINFORMATION

FIG. 17

IN BUFFER MEMORY

VIDEO INFORMATION PLAYBACK TIME

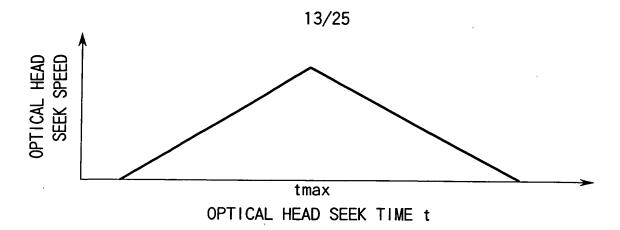


FIG. 19

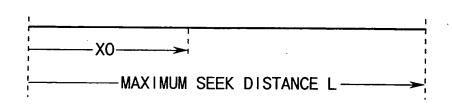


FIG. 20

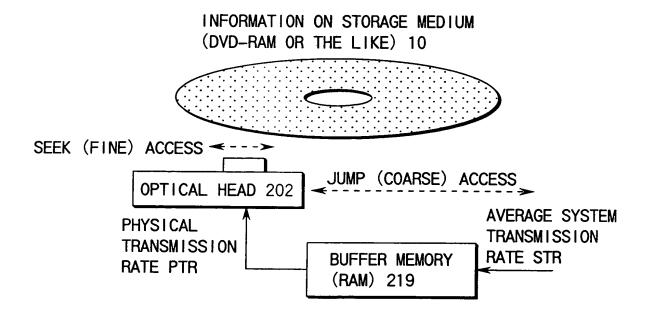


FIG. 21

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FREE AREA 107	C	ELL #	1	CELL	_ #2	CELL #3			
	VOBU VOBU VOBU VOBU 108a 108b 108c 108d								

FIG. 22

FREE AREA 107	CELL #1		CELL #2A	-	CELL #2B			CELL #3			
	V0BU 108a	V0BU 108b	V0BU	V0BU 108d	\\(\)(\))BU;)8e;	V0BU 108f	V0BU 108g	VOBU 108h	V0BU 108 i	VOBU 108 j

FIG. 23

CELL #2A	C	ELL #	1	CELL #2B			CELL #3			
VOBU VOBU	V0BU	V0BU	V0BU	VOBU;	V0BU	V0BU	V0BU	V0BU	V0BU	
108d* 108p	108a	108b	108c*	108q;	108f	108g	108h	108 i	108 j	

FREE AREA 106

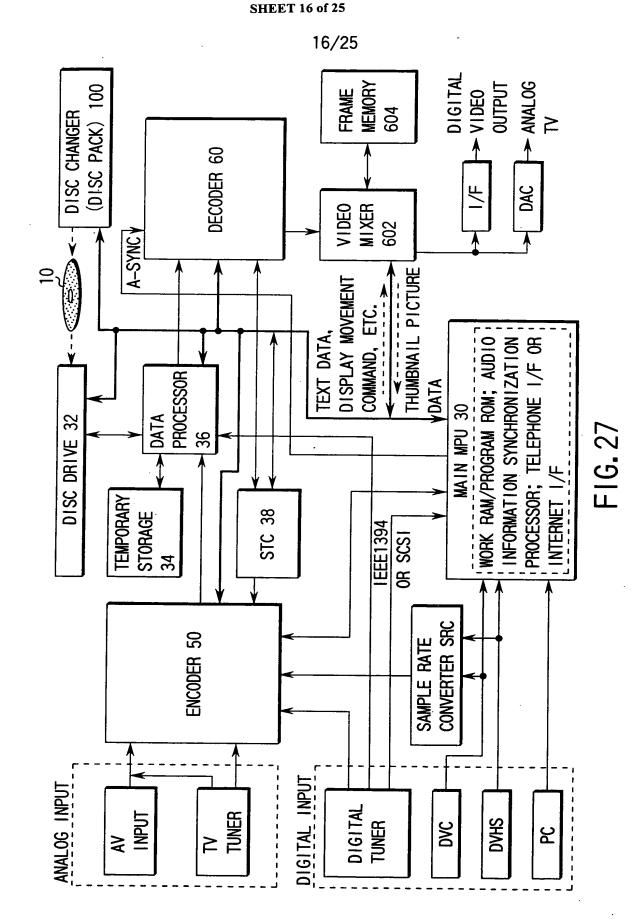
FIG. 24

DOCKET NO: 249776US2S DIV VENTOR: Hideo ANDO, et al. SHEET 15 of 25 15/25 VIDEO INFORMATION

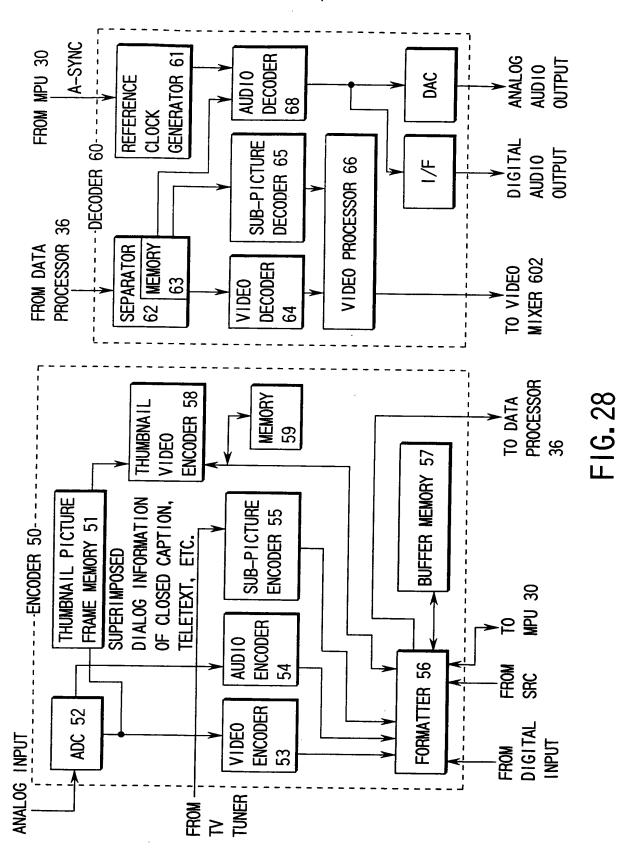
PLAYBACK TIME VIDEO INFORMATION

PLAYBACK TIME VIDEO INFORMATION PLAYBACK TIME OF VIDEOINFORMATION IN BUFFER MEMORY TEMPORARY SAVED AMOUNT VIDEO INFORMATION RECORDING TIME SEEK ACCESS TIME ROTATION WAIT TIME FIG. 25 OF VIDEOINFORMATION IN BUFFER MEMORY TEMPORARY SAVED AMOUNT SEEK ACCESS TIME SEEK ACCESS TIME ROTATION WAIT TIME VIDEO INFORMATION RECORDING TIME JUMP ACCESS TIME ROTATION WAIT TIME JUMP ACCESS TIME VIDEO INFORMAT RECORDING T FIG. 26

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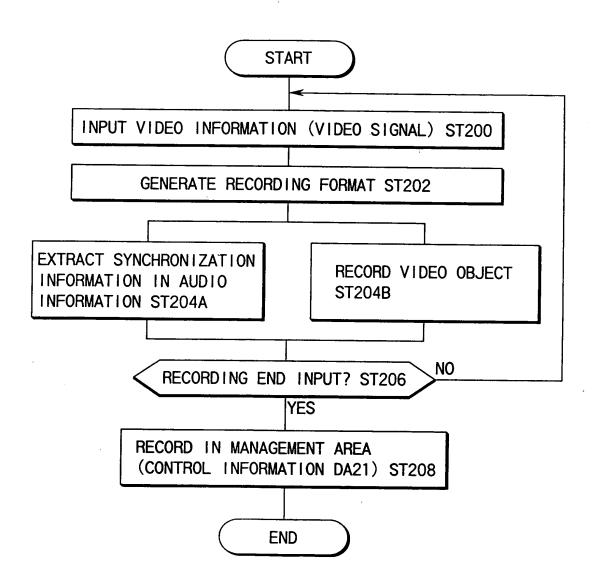
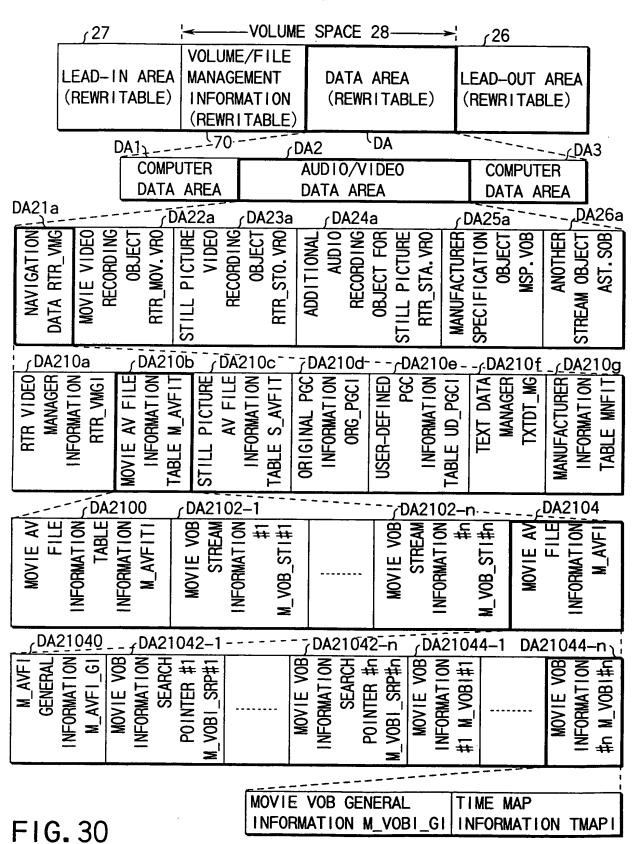


FIG. 29

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									IERAL I_VOB I_		IME NFOR		AP ATION T	MAPI
TIME MAP GENERAL INFORMAT TMAP_GI		TIME ENTRY TM_ENT			TIM ENT TM_	RY		E	OBU NTRY ‡ OBU_EN			E	OBU NTRY # OBU_EN	
				. – – – •			<u>-</u> -							
		ENTRY							٧	OBU E	NTRY	′‡	‡q	
VOBU#1 1STREF _SZ	V	'OBU#1 'OBU_PB .T M	'	Vobu# [:] Vobu _Sz			-		BU#q TREF Z	1	IU#q IU_PE I	3	VOBU VOBU _SZ	
			(- · ·		
_ 0	NUMBER OF PICTURES OF VOBU #1 NUMBER OF PICTURES OF VOBU #2				SIZE OF VOBU #1			7# 000A	I-PICTURE	VOBU#1		בייייייייייייייייייייייייייייייייייייי	SIZE OF VOBU#2	
CTG1#	m (C	GENER CELL DA ON/TIM	TA G		L				(VO	L VOB BU GE ORMAT	NERA	L	E CVT	‡m
								·					∠CT1#r	n !
CELL TIME CONTROL GENERAL INFORMATION CELL TIME SEARCH INFORMATION #1 CELL TIME INFORMATION #2									CELL TIME					
								CT	CI CI					
ALLOC MAP T				C CONT			CEL	L	TIME RMATIO		ROL		-	
CORRESPO	CORRESPONDING TO AV DATA CONTROL INFORMATION DA210								RMATIO	N DA2	10			

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TIME MAP GENERAL INFORMATION TMAP_GI

RELATIVE BYTE POSITION	FIELD NAME	CONTENTS	NUMBER OF BYTES
0-1	TM_FNT_Ns	NUMBER OF TIME ENTRIES	2
2–3	V0BU_ENT_Ns	NUMBER OF VOBU ENTRIES	2
4–5	TM_OFS	TIME OFFSET	2
6–9	ADR_OFS	ADDRESS OFFSET	4

FIG. 32

TIME ENTRY TM_ENT

RELATIVE BYTE POSITION	FIELD NAME	CONTENTS	NUMBER OF BYTES
0–1	VOBU_ENTN	VOBU ENTRY NUMBER	2
2	TM_DIFF	TIME DIFFERENCE	1
3–6	VOBU_ADR	TARGET VOBU ADDRESS	4

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					-DA	TA A	REA	(R	EWR	ITA	BLE)	DA	\ 					>	
RTR MOB.VRO DA22a-1			1	COMPUTER DATA FILE				RTR MOB.VRO DA22a-2				RTR STO. VRO DA23a-1			RTR MOB. VRO DA22a-3				
EXTENT /SET #A				EXTENT /SET #B			EXTENT /SET #C			EXTENT /SET #D			EXTENT /SET #E						
LBN = LOGICAL BLOCK NUMBER																			
V_PCK_LBN·a	SP_PCK LBN·a+g	V_PCK LBN·a+g+1		V_PCK LBN·a+b-1	PC_DAT LBN·a+b		V_PCK LBN·c	V_PCK LBN·c+1		V_PCK LBN·c+d-1	V_PCK LBN·c+d		A_PCK LBN·e-1	V_PCK LBN·e		V_PCK LBN·e+h		A_PCK LBN·e+f-1	
M'ADR = MUVIE				ADDRESS				Ţ.ĂD				R = STILL PIC				TURE ADDRESS			
V_PCK M·ADR o	SP_PCK M·ADR g	V_PCK M·ADR g+1		V_PCK M·ADR b-1	V_PCK M.ADR b		V_PCK M·ADR b+h		A_PCK M-ADR b+f-1	V_PCK M.ADR b+f	V_PCK M-ADR b+f+1		V_PCK M.ADR b+f+d-1			V_PCK ST-ADR o		A_PCK ST.ADR e-c-d	
							!			1			1		, I			1	
VOBU#1		VOBU#2		VOBU#3		3	VOBU#4			VOBU#5				VOB					
VIDEO OBJECT VO)B# α			VOB#			B					ENTRY		Y		
VOBU_ PB_TM		VOBU_ PB_TM		VOBU_ PB_TM			VOBU_ PB_TM			VOBU_ PB_TM			•		VOB GROUP		5		
	TIA	ME D		EREI M_D				TIM	E E	NTR	/ PC	INT			Ļ				

FIG. 34

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ROOT DIRECTORY SUBDIRECTORY DVD_RTR DIRECTORY FILE RTR. IFO (NAVIGATION DATA RTR_VMG) RTR. BUP (BACKUP OF RTR. 1F0) RTR. MOV. VRO (MOVIE VIDEO OBJECT) RTR_STO. VRO (STILL PICTURE VIDEO OBJECT) RTR_STA. VRO (ADDITIONAL AUDIO OBJECT FOR STILL PICTURE) MSP. VOB (MANUFACTURER SPECIFICATION OBJECT) AST. SOB (ANOTHER STREAM OBJECT) RTR = REAL-TIME RECORDING OTHER DIRECTORIES VIDEO_TS (VIDEO TITLE SET) AUDIO_TS (AUDIO TITLE SET) SUBDIRECTORY FOR OTHER FILES SAVING COMPUTER DATA

FIG. 35

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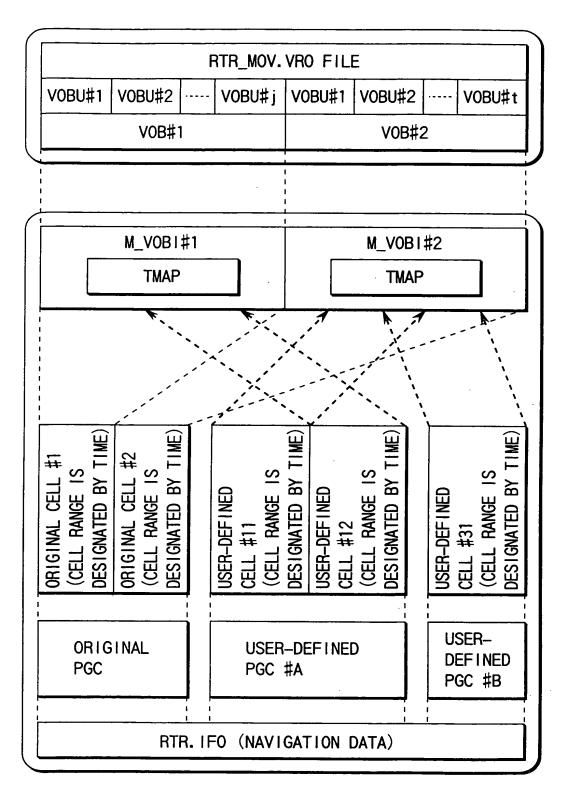


FIG. 36

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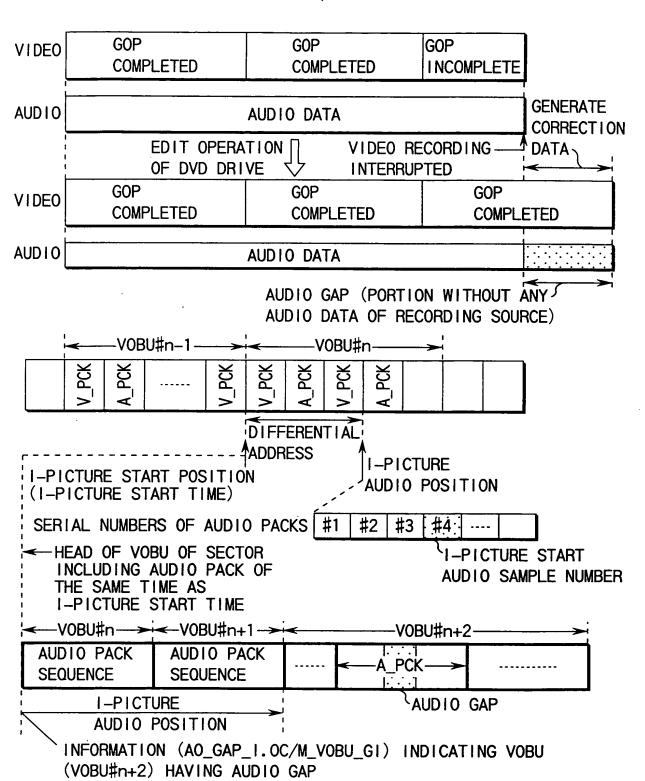


FIG. 37